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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/489,511	01/21/00	EASWAR V	LS/0002.00

WM01/1002

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2612	5

DATE MAILED: 10/02/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/489,511	Easwar et al.
Examiner	**Art Unit**
Luong Nguyen	2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-60* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-60* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 1-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 (line 11) recites limitation "the primary channel" which is unclear, because the claim fails to show this limitation is referred to limitation "primary and secondary channels" recited in line 3, claim 1, or limitation "primary and secondary channels" recited in line 5, claim 1.

Claims 2-22 are rejected as being dependent on claim 1.

Claim 26 (line 13) recites limitation "the primary channel" which is unclear, because the claim fails to show this limitation is referred to limitation "a primary channel" recited in line 4, claim 1, or limitation "primary and secondary channels" recited in lines 6-7, claim 1.

Claims 2-22 are rejected as being dependent on claim 1.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-7, 11-14, 16, 25-31, 35-38, 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Rabbani et al. (US 5,412,427).

Regarding claims 1 and 26, Rabbani et al. disclose an electronic camera utilizing image compression feedback for improved color processing, comprising receiving an image in a first color space RGB (R, G, B, figures 6-7, column 5, lines 5-35); storing information describing a second color space (Y', (R-Y'), (B-Y') are stored in storage module 28); transforming the image into said second color space (color transformation 14, figures 6-7, column 5, lines 42-56); interpolating the primary channel (interpolation 24, figure 7, column 5, lines 45-56); computing the secondary channels (summers 26a and 26b, figure 7, column 5, lines 45-56).

Regarding claims 2 and 27, Rabbani et al. disclose wherein Green incorporates colors that are substantially green (column 4, lines 10-36).

Regarding claims 3 and 28, Rabbani et al. disclose wherein said second color space comprises a GUV color space (color space Y, (R-Y'), (B-Y'), figure 6).

Regarding claim 4, Rabbani et al. disclose the secondary channels of the first color space comprise predominantly Red and Blue (figure 6).

Regarding claims 5 and 29, Rabbani et al. disclose an RGB mosaic (figure 4).

Regarding claims 6 and 30, Rabbani et al. disclose a Bayer pattern (figure 4, column 5, line 4).

Regarding claims 7 and 31, Rabbani et al. disclose after the image is transformed into second color space, compressing the transformed image (compression stages 16a, 16b, figure 7, column 5, lines 40-50).

Regarding claims 11 and 35, Rabbani et al. disclose compressing step comprises individually compressing each plane (compression 16a, 16b, figures 6-7).

Regarding claims 12 and 36, Rabbani et al. disclose transmitting the compressed, transformed image to a target platform (compressed signals could be downloaded to a personal computer, column 6, lines 15-20).

Regarding claims 13 and 37, Rabbani et al. disclose computing device (personal computer, column 6, lines 15-20).

Regarding claims 14 and 38, Rabbani et al. disclose desktop computer (personal computer, column 6, lines 15-20).

Regarding claims 16 and 40, Rabbani et al. disclose wire-line transmission (cable interface, column 6, lines 15-20).

Regarding claim 25, Rabbani et al. disclose said transmitting step occurs before the primary channel of the second color space is interpreted to full resolution for the image (figure 6).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427).

Regarding claim 17, Rabbani et al. fail to specifically disclose restoring said compressed, transformed image at the target platform. However, Rabbani et al. disclose compressed image could be downloaded to the personal computer. It would have been obvious to include the step of restoring the compressed image at the computer in order to display the image on the monitor for viewing.

Regarding claims 18-19, Rabbani et al. disclose transforming the non-compressed image into a standard-format color image (JPEG format, column 4, lines 60-65).

Regarding claim 20, Rabbani et al. disclose transforming the non-compressed image into YUV color space (figure 6).

Regarding claim 21, Rabbani et al. disclose transforming the non-compressed image into RGB color space (figure 6).

6. Claims 8-10, 23-24, 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427) in view of Wang et al. (US 5,682,152).

Regarding claims 8 and 32, Rabbani et al. fail to specifically disclose using transformed-based compression. However, Wang et al. teach compression algorithm using DCT (discrete

cosine transform) algorithm (column 1, lines 55-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Rabbani et al. by the teaching of Wang et al. in order to transform image in JPEG format.

Regarding claims 9 and 33, Wang et al. disclose wavelet transform-based compression (column 1, lines 55-60).

Regarding claims 10 and 34, Wang et al. disclose DCT base compression (column 1, lines 55-60).

Regarding claim 23, Wang et al. disclose quantization and entropy coding (see abstract).

Regarding claim 24, Wang et al. disclose Huffman coding (see abstract).

7. Claims 15 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427) in view of Fukuoka (US 5,754,227),

Regarding claims 15 and 39, Rabbani et al. fail to specifically disclose si transmitting step is performed using wireless transmission. However, Fukuoka teaches images captured by the camera can be transferred through the I/O card 15 which functions as modem connected to an on-line service such as American On Line (column 3, lines 50-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Rabbani et al. by the teaching of Fukuoka in order to transmit the image to a remote device without using cable.

8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427) in view of Tsai et al. (US 5,172,227).

Regarding claim 22, Rabbani et al. fail to specifically disclose wherein said interpolating step applying averaging technique. However, Tsai et al. teach image compression with color interpolation in which the missing green pixels are computed by using the center-weight average (column 8, lines 7-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Rabbani et al. by the teaching of Tsai et al. in order to compute the missing green pixel.

9. Claims 41, 43, 48-54, 58-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427) in view of Bauchspies (US 6,008,847).

Regarding claim 41, Rabbani et al. disclose an electronic camera utilizing image compression feedback for improved color processing, comprising an imager, disclosed as image sensor 40 (figure 7, column 5, lines 1-36); transforming module, disclosed as transformation stage 14 (figure 7, column 5, lines 37-56); compression module (compression stages 16a, 16b, 16c, figure 7, column 5, lines 40-55); a communication link (cable interface, column 6, lines 15-20); target device (personal computer, column 6, lines 15-20). Rabbani et al. fail to specifically disclose a decompression module at the target device. However, Bauchspies teach a temporal compression and decompression system in which the compressed video stream 105 is transmitted over the telephone line to a remote computer 92 (target device) for subsequent temporal

decompression 106 (figure 2, column 5, lines 40-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Rabbani et al. by the teaching of Bauchspies in order to display the image on the monitor of the computer.

Regarding claim 43, Rabbani et al. disclose luminosity information for the image captured at the imager (figures 6-7).

Regarding claim 48, Rabbani et al. disclose transformed image information in a wire-based manner (cable interface, column 6, lines 15-20).

Regarding claim 49, it is well-known in the art to use a serial communication port in a communication link as a way to transmit data.

Regarding claim 50, Rabbani et al. disclose interpolation module (interpolation 24', figure 3).

Regarding claim 51, Rabbani et al. disclose said interpolation module applies YUV transformation for converting image in YUV color space (figure 3).

Regarding claim 52, Bauchspies discloses a standard-compressed format at the target device (the system using discrete cosine transform, column 31, lines 34-40).

Regarding claim 53, it is well-known in the art to use JPEG file format in discrete cosine transform.

Regarding claim 54, it is well-known in the art to use JPEG compression in compressing image.

As for claims 58-60, Rabbani et al. disclose the compressed signals could be downloaded to the computer. It would have been obvious that lower-quality image is converted into higher-quality image in order to let the user could see a higher quality on the display.

10. Claims 42, 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427) in view of Bauchspies (US 6,008,847) further in view of Fukuoka (US 5,754,227).

Regarding claim 42, Rabbani et al. and Bauchspies fail to specifically disclose wherein said communication link comprises a wireless communication link. However, Fukuoka teaches images captured by the camera can be transferred through the I/O card 15 which functions as modem connected to an on-line service such as American On Line (column 3, lines 50-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Rabbani et al. and Bauchspies by the teaching of Fukuoka in order to transmit the image to a remote device without using cable.

Regarding claim 55, Fukuoka discloses a digital camera (digital camera 30, figure 3, column 4, lines 34-50); computer (computer 33, figure 3, column 4, lines 34-50); cellular phone device (cellular phone, figure 3, column 5, lines 40-45).

Regarding claim 56, Fukuoka discloses wherein said communication link is coupled to the cellular phone for establishing a wireless communication session between the digital camera and the computer (column 5, lines 40-48).

Regarding claim 57, Fukuoka discloses computer connect to Internet (American On Line, column 3, lines 55-60).

11. Claims 44-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabbani et al. (US 5,412,427) in view of Bauchspies (US 6,008,847) further in view of Wang et al. (US 5,682,152).

Regarding claim 44, Rabbani et al. and Bauchspies fail to specifically disclose using transform-based module. However, Wang et al. teach compression algorithm using DCT (discrete cosine transform) algorithm (column 1, lines 55-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Rabbani et al. and Bauchspies by the teaching of Wang et al. in order to transform image in JPEG format.

Regarding claim 45, Wang et al. disclose wavelet transform-based compression (column 1, lines 55-60).

Regarding claim 46, Wang et al. disclose DCT based compression (column 1, lines 55-60).

Regarding claim 47, Bauchspies discloses a transformed-based decompresion (decompression 106, figure 2, column 5, lines 40-44).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Takahashi (US 5,798,794) discloses wavelet transform subband coding with frequency-dependent quantization step.

Acharya et al. (US 6,154,493) disclose compression of color images based on 2-dimensional discrete wavelet transform yielding a perceptually lossless image.

Mitchell et al. (US 6,243,420) disclose multi-spectral image compression and transformation.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Luong Nguyen** whose telephone number is **(703) 308-9297.** If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Wendy Garber**, can be reach on **(703) 305-4929.**

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872 - 9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a genreal nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

LN LN
9/28/2001

WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600